What is claimed is:

1. A method of forming an optical waveguide fiber, the method comprising:

providing a preform comprising a fused silica tube, a first pellet disposed in the tube, and a second pellet disposed in the tube adjacent the first pellet, wherein the first and second pellets are of disparate types, and wherein adjacent surfaces of the first and second pellets form an interface;

heating the preform;

pulling on at least one end of the preform to draw an optical fiber therefrom, thereby stretching the interface into a transition region which contains at least a portion of both the first and second pellets; and

severing a selected portion of the optical fiber, the selected portion containing at least part of the transition region, wherein the at least part of the transition region forms the majority of the selected portion.

2. The method according to claim 1 further comprising applying a layer of silica soot to the exterior surface of the preform.

3. The method according to claim 2 further comprising consolidating the layer of silica soot.

4. The method according to claim 1 wherein the selected portion has a length of less than about 10m.

5. The method according to claim 1 wherein the selected portion has a length of less than about 5m.

6. The method according to claim 1 wherein the selected portion has a length of less than about 3m.

7. The method according to claim 1 wherein the preform is fabricated by providing a fused silica tube, placing a first pellet into the tube, and placing a second pellet into the tube adjacent the first pellet.

8. The method according to claim 1 further comprising exposing the preform to a cleaning gas.

9. The method according to claim 8 wherein the preform is exposed to a cleaning gas while being heated.

10. The method according to claim 1 wherein the selected portion contains essentially all of the transition region, and wherein the transition region forms the majority of the length of the selected portion.

11. The method according to claim 1 wherein the heating step comprises heating at least a portion of the preform to a temperature above about 1000°C and less than the consolidation temperature of the preform.

12. The method according to claim 1 wherein the heating step comprises heating at least a portion of the preform to a temperature between about 1000°C and about 1400°C.

13. The method according to claim 1 wherein the heating step comprises heating at least a portion of the preform to a temperature between about 1000°C and about 1400°C, then heating the at least a portion of the preform to a temperature between about 1400°C and about 1550°C.

14. The method according to claim 1 wherein the heating step comprises heating at least a portion of the preform to a temperature between about 1000°C and about 1400°C, then heating the at least a portion of the preform to a temperature between about 1900°C and about 2000°C.

15. The method according to claim 1 wherein the heating step comprises heating at least a portion of the preform to a temperature between about 1900°C and about 2000°C.

16. The method according to claim 1 further comprising fusing a first optical waveguide fiber to one end of the selected portion of optical fiber and fusing a second optical waveguide fiber to the other end of the selected portion of optical fiber.

17. The method according to claim 16 wherein the first optical waveguide fiber exhibits positive dispersion in a selected wavelength range and the second optical waveguide fiber exhibits negative dispersion in the selected wavelength range.

18. A method of forming a transition optical waveguide fiber, the method comprising:

fabricating a preform by providing a fused silica tube, placing a first pellet of a first type into the tube, and placing a second pellet of a second type into the tube adjacent the first pellet, and wherein adjacent surfaces of the first and second pellets form an interface;

heating the preform;

pulling on at least one end of the preform to draw an optical fiber therefrom, thereby stretching the interface into a transition region containing at least part of the first pellet and at least part of the second pellet;

locating a portion of the optical fiber containing the transition region; and

severing the portion of the optical fiber containing the transition region from the remainder of the optical fiber.

19. The method according to claim 18 wherein the first and second pellets have differing compositions.

20. The method according to claim 18 wherein the first and second pellets have differing refractive index profiles.

21. The method according to claim 18 wherein the first and second pellets contain different dopants.

22. The method according to claim 18 wherein one of the pellets is formed from a fused silica preform capable of yielding a positive dispersion fiber and the other of the pellets is formed from a fused silica preform capable of yielding a negative dispersion fiber.

23. The method according to claim 18 further comprising alternately placing pellets of the first and second types into the tube.

24. The method according to claim 18 further comprising placing a plurality of pellets into the tube to form a plurality of interfaces.

25. The method according to claim 24 wherein at least two of the plurality of interfaces are stretched into at least two respective transition regions.

26. The method according to claim 25 wherein at least two transition fibers are selectively severed from the drawn optical fiber.

27. The method according to claim 24 wherein at least two interfaces are formed from at least three different types of pellets.

28. The method according to claim 18 wherein the pellet is formed from a core rod.

29. The method according to claim 28 wherein the core rod is scored and the pellet is snapped from the core rod at the score.

30. An optical waveguide fiber comprising:

a transition core region including a first core portion and a second core portion;

wherein the first and second portions are formed from disparate materials;

wherein the first and second core portions are axisymmetrically disposed about a common longitudinal axis at the center of the fiber;

wherein the first and second core portions share a generally conically-shaped interface;

wherein parts of both the first core portion and the second core portion are disposed on at least one transverse plane perpendicular to the longitudinal axis; and

wherein the transition region occupies at least the majority of the length of the fiber.

31. The optical waveguide fiber according to claim 30 wherein the generally conically-shaped interface is axisymmetrically disposed about the common longitudinal axis.

32. The optical waveguide fiber according to claim 30 wherein the generally conically-shaped interface is paraboloidal.

33. The optical waveguide fiber according to claim 30 wherein the first and second portions are formed from disparately structured pellets.

34. The optical waveguide fiber according to claim 30 wherein the transition region occupies substantially the entire length of the fiber.

35. The optical waveguide fiber according to claim 30 wherein the transition region occupies the entire length of the fiber.

36. The optical waveguide fiber according to claim 30 wherein the fiber has a length between about 1 m and about 10 m.

37. The optical waveguide fiber according to claim 30 wherein the fiber has a length between about 2 m and about 8 m.

38. The optical waveguide fiber according to claim 30 wherein the fiber has a length between about 3 m and about 5 m.

39. The optical waveguide fiber according to claim 30 wherein the fiber has a length of about 3 m.

40. An optical waveguide fiber span comprising a first optical waveguide fiber connected to the optical waveguide fiber of claim 30, wherein the first connecting fiber is connected to the first portion of the transition region of the optical waveguide fiber of claim 30.

41. The optical waveguide fiber according to claim 40 further comprising a second optical waveguide fiber connected to the second portion of the transition region.